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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,956

11/13/2008

Matthew P.J. Baker

GB04 0026 US1

9719

24737 7590 02/22/2010  
PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
P.O. BOX 3001  
BRIARCLIFF MANOR, NY 10510

EXAMINER

NGUYEN, DAVID Q

ART UNIT

PAPER NUMBER

2617

MAIL DATE

DELIVERY MODE

02/22/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,956	<b>Applicant(s)</b> BAKER ET AL.	
	<b>Examiner</b> DAVID Q. NGUYEN	<b>Art Unit</b> 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>06/30/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-6 and 9-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (US 2003/0039321 A1).

Regarding claim 1, Lee et al. disclose a method of signalling between communication equipments in a communication system adapted to transmit first data (see par.0010; low compression signal) from a first communication equipment to a second communication equipment by modulating a carrier signal according to a first set of constellation points (see fig. 1; QPSK) having a first minimum distance between constellation points corresponding to first and second values of the first data, the method comprising:

transmitting first and second data simultaneously by modulating the carrier signal according to a second set of constellation points arranged in a constellation plane (fig. 2B, 4B, 6B, 7B and par. 0060; 8QAM), wherein the second set of constellation points is arranged such that:

a first subset of the second set of constellation points located in a first part of the constellation plane (quadrant A in fig. 7A-C) correspond to a first value of the first data;

a second subset of the second set of constellation points located in a second part of the constellation plane (quadrant A in fig. 7A-C) correspond to a second value of the first data;

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wherein each of the first and second subsets comprises constellation points corresponding to at least first and second values of the second data (see par. 0063; additional information); and

wherein the minimum distance between the constellation points of the first subset and the constellation points of the second subset is not less than the first minimum distance (see figure 11A and par. 0080).

Regarding claim 15, Lee et al. disclose a communication equipment for transmitting first and second data simultaneously in a communication system adapted to communicate the first data by modulating a carrier signal according to a first set of constellation points having a first minimum distance between constellation points corresponding to first and second values of the first data, the communications equipment comprising:

modulation means adapted to modulate the carrier signal (see fig. 1; QPSK) according to a second set of constellation points arranged in a constellation plane (fig. 2B, 4B, 6B, 7B and par. 0060; 8QAM), wherein the second set of constellation points is arranged such that:

a first subset of the second set of constellation points located in a first part of the constellation plane (quadrant A in fig. 7A-C) correspond to a first value of the first data;

a second subset of the second set of constellation points located in a second part of the constellation plane (quadrant A in fig. 7A-C) correspond to a second value of the first data;

wherein each of the first and second subsets comprises constellation points corresponding to at least first and second values of the second data (see par. 0063; additional information); and wherein the minimum distance between the constellation points of the first subset and the constellation points of the second subset is not less than the first minimum distance (see figure

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11A and par. 0080); and transmitter means for transmitting the modulated carrier signal (see par. 0015).

Regarding claim 2 and 16, Lee et al. disclose wherein the minimum distance between the constellation points of the second set of constellation points and the perpendicular bisector of the straight line joining the closest two points corresponding respectively to first and second values of the first data in the first set of constellation points is not less than half the first minimum distance (see fig. 11A and par. 0080; minimum distance to straight line between subsets; y axis of figure 11A).

Regarding claim 3-6, Lee et al. disclose wherein each of the first and second subsets comprises two constellation points (see figures 2B, 4B, 6B, 7B; star like constellation for 2 points in each subset); wherein the second set of constellation points includes the first set of constellation points (see figures 2B, 4B, 6B, 7B; star like constellation for 2 points in each subset); wherein the first set of constellation points comprises points and the first subset of the second set of constellation points comprises points and the second subset of the second set of constellation points comprises points and, where  $x_3 > x_{1a}$ ,  $x_4 > x_{2a}$ ,  $y_3 > y_{1a}$  and  $y_4 > y_{2a}$ , where  $x_{1a}$ ,  $x_{2a}$ ,  $x_3$ ,  $x_4$ ,  $y_{1a}$ ,  $y_{2a}$ ,  $y_3$ ,  $y_4$  are positive numbers (see figures 2B, 4B, 6B, 7B; star like constellation for 2 points in each subset); wherein substantially  $x_1 = x_2 = y_1 = y_2 = 1$  and  $x_3 = x_4 = y_3 = y_4 = 2x_1$  (see figures 2B, 4B, 6B, 7B; star like constellation for 2 points in each subset).

Regarding claim 9-13, Lee et al. disclose wherein each of the first and second subsets comprise four constellation points (see figures 2C, 4C, 6C, 7C; 4 points in each subset); wherein in each subset of four constellation points, a first pair of constellation points correspond to

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respectively the first and second values of the second data, and a second pair of constellation points correspond to respectively the first and second values of the second data, and further comprising switching between transmission of the first and second pair according to a predetermined criterion (see figures 2C, 4C, 6C, 7C; 4 points in each subset); transmitting third data simultaneously to the first and second data, wherein, in each subset of four constellation points, first and second pairs of constellation points correspond respectively to first and second values of the third data (see figures 2C, 4C, 6C, 7C; 4 points in each subset); wherein in the first subset of four constellation points the first pair of constellation points is and the second pair of constellation points is and in the second subset of four constellation points the first pair of constellation points is and the second pair of constellation points is and where  $x_3 > x_1$ ,  $x_4 > x_2$ ,  $x_5 \geq 2x_1$ ,  $x_6 \geq 2x_2$ ,  $y_3 > y_1$ ,  $y_4 > y_2$ ,  $y_5 \geq 2y_1$  and  $y_6 \geq 2y_2$ , where  $x_1$ ,  $x_2$ ,  $x_3$ ,  $x_4$ ,  $x_5$ ,  $x_6$ ,  $y_1$ ,  $y_2$ ,  $y_3$ ,  $y_4$ ,  $y_5$ , and  $y_6$  are positive numbers (see figures 2C, 4C, 6C, 7C; 4 points in each subset); wherein substantially  $x_1 = x_2 = y_1 = y_2 = 1$  and  $x_3 = x_4 = x_5 = x_6 = y_3 = y_4 = y_5 = y_6 = 2x_1$  (see figures 2C, 4C, 6C, 7C; 4 points in each subset).

Regarding claim 14, 16-17, Lee et al. disclose comprising receiving the modulated carrier signal at first and second receiving equipments and at the first receiving equipment demodulating only the first data, and at the second receiving equipment demodulating at least the second data (see abstract, par. 0009-0010, 0054-0055; first equipment for first data second equipment for second data; backwards compatibility); wherein the modulation means is adapted to modulate the carrier (see abstract, par. 0009-0010, 0054-0055; first equipment for first data second equipment for second data; backwards compatibility); a first communication equipment as claimed in claim 15, a second communication equipment having first receiving means for receiving the modulated

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carrier signal and first demodulation means adapted to derive only the first data and a third communication equipment having second receiving means for receiving the modulated carrier signal and first demodulation means adapted to derive at least the second data (see abstract, par. 0009-0010, 0054-0055; first equipment for first data second equipment for second data; backwards compatibility).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US 2003/0039321 A1) in view of Mizuno et al. (US 5066957).

Regarding claim 7-8, Lee et al. do not disclose wherein the first set of constellation points comprises points and the first subset of the second set of constellation points comprises points and the second subset of the second set of constellation points comprises points and  $x_5 \geq 2x_{1b}$ ,  $x_6 \geq 2x_{2b}$ ,  $y_5 \geq 2y_{1b}$  and  $y_6 \geq 2y_{2b}$ , where  $x_{1b}$ ,  $x_{2b}$ ,  $x_5$ ,  $x_6$ ,  $y_{1b}$ ,  $y_{2b}$ ,  $y_5$ ,  $y_6$  are positive numbers; wherein substantially  $x_1 = x_2 = y_1 = y_2 = 1$  and  $x_5 = x_6 = y_5 = y_6 = 2x_1$ . However, Mizuno et al. disclose the first set of constellation points comprises points and the first subset of the second set of constellation points comprises points and the second subset of the second set of constellation points comprises points and  $x_5 \geq 2x_{1b}$ ,  $x_6 \geq 2x_{2b}$ ,  $y_5 \geq 2y_{1b}$  and  $y_6 \geq 2y_{2b}$ , where  $x_{1b}$ ,  $x_{2b}$ ,  $x_5$ ,  $x_6$ ,  $y_{1b}$ ,  $y_{2b}$ ,  $y_5$ ,  $y_6$  are positive numbers; wherein substantially  $x_1 = x_2 = y_1 = y_2 = 1$  and

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$x_5=x_6=y_5=y_6=2x_1$  (see col. 3, line 16 to col. 4, line 6 and fig. 2-3; QPSK-like constellation).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the above teaching of Mizuno et al. to Lee et al. so that signals received in a quadrant are demodulated as a QPSK signal within the current quadrant.

### ***Conclusion***

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID Q. NGUYEN whose telephone number is (571)272-7844. The examiner can normally be reached on 8:30AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis G. West can be reached on (571)272-7859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David Q Nguyen/  
Primary Examiner, Art Unit 2617